happen in Alpine scenery, the rocks have come out too dark. Among the full-page illustrations, hoar-frost on a tree, a frozen lake in the Engadine, and a view at Ragaz strike us as particularly good. In fact, though the book is certainly not free from defects, it has not a few countervailing merits.

COLOUR AND PIGMENTS.

Colour-sense Training and Colour Using. By E. J. Taylor. Pp. 88. (London: Blackie and Son, Ltd., 1908.)

THIS should prove a very useful little book to teachers who wish to explain the fundamental laws of colour to their pupils. The old division of the spectrum into the three primaries—blue, yellow and red—still persists among artists and leads to much confusion of thought, and doubtless a book of this character will assist in bringing in a truer perception of the nature of colour-vision, while it is not so difficult as Prof. Church's book or Sir William Abney's "Colour Measurement and Mixture."

The author in dealing with this subject takes the ordinary Young-Helmholtz theory of the primary colour sensations, and is quite right in so doing. It is simpler, and at any rate covers most of the facts, and there is no need in a book of this character to discuss any rival theories which may exist. The weakest chapter in the book is that dealing with the mixing of pigments, and in a future edition this chapter might well be re-written and developed. One of the most important lessons the artist can learn from the study of the theory of colour is the extent to which he can limit his palette and get all the effects he requires. For instance, by means of a rich madder, cobalt yellow, viridian, and cobalt blue, every tint can be obtained, including a deep, rich, velvety black, while a complete spectrum can be constructed on a lower key by the use of black, Indian and Venetian red and yellow ochre, and it is therefore of great importance that the art student, having once mastered the theory, should test it by experiments with a few selected pigments, and should realise for himself that lampblack and yellow ochre really give a green, and that he can get practically a complete absorption of the spectrum from not more than three or four pigments.

It is also of importance that he should be trained to use a palette consisting of permanent pigments, and should avoid as far as possible those that are fugitive. It is therefore a pity to see in a modern text-book an artist advised to use such pigments as crimson lake, carmine, indigo and gamboge. These should all be excluded. The writer has also apparently not realised the extent to which his theory will assist the artist who wishes to paint in the method of the French impressionist school by the juxtaposition of small dots of colour instead of by an actual mixing of the pigments. If, for instance, blue and yellow are painted in small dots side by side, from a little distance the effect is to give a grey and not a green; in fact, green is the one colour which cannot be produced by such juxtaposition of pigment, but must be obtained either by the use of a green pigment or the mixing of a blue and yellow so as to leave the net result of their mutual absorptions. A short discussion, therefore, of the French method of painting as opposed to the method of mixing pigments, and a statement of the actual results obtained by the blending in the eye of the lights reflected from two separate pure pigments painted side by side, would be of great value to the modern artist. Most of our painters to-day make use of both methods to get their effects, and would probably be much helped by being taught a few fundamental principles. The only reference which the author has to this method of painting is to be found on p. 60, where he says the designers avoid dirty tones by placing the pigments very close, with the alternate colours in dots and dashes, but he does not seem to realise that the resulting colour may be quite different from that obtained by blending the pigments.

There is another difficulty which faces the artist in dealing with actual pigments, and which has not been discussed by the author. Many when mixed with white completely alter in tint, and the matter is not so simple as it would appear from the description in the text of the graded tones to be obtained in this way. To take a simple instance, the great value of yellow ochre to an artist is that it can be mixed with white without an alteration in the tint, so that the yellow ochre let down with white has the same colour value to the eye. This is not true of most other yellows, and consequently yellow ochre is invaluable for producing the effect of bright sunlight falling on a white surface. With reference to the training of children in the meaning of colour, it is open to question if the modern kindergarten methods are wise. The colours which are used in practice for training young children, and from which they are supposed to build up various patterns, are remarkable for their peculiar ugliness and the hideous colour schemes which result from them. Children grow up with a beautiful perception of true colour schemes in many lands where the kindergarten methods have never been heard of, and one of our greatest difficulties at present is that those engaged in trade processes which involve the use of colour have no fine sense of what is beautiful. It is surely an open question whether the hideous colours presented to very young children in the kindergarten classes are not positively injurious, and tend to destroy any instinctive taste for colour with which they have been endowed by nature.

THE ATLAS OF CANADA.

Atlas of Canada. Prepared under the direction of J. White. Pp. 21; 83 plates. (Canada: Department of the Interior, 1906.)

THIS atlas, which has been compiled with great care, shows, in a form which can usually if not always be easily comprehended, much of the information which is at present obtainable concerning the Great Dominion. It contains about forty maps, and rather more than that number of plates of diagrams.

Regarding the arrangement of the maps it is unfortunate that some method more in agreement with the principles of geographical development has not been followed; why the distribution of telegraphs and telephones should precede that of temperature and rainfall is not easy to understand. In a few cases also the maps might have been improved; it is to be regretted, for example, that some other method than that chosen was not adopted to show the physical features of the land, at least in the better-known parts of the country. To mark everything above 2000 feet in height in one of three shades of brown results in a map which is decidedly wanting in plasticity. The map showing drainage areas would also have been rendered more effective had it been printed in different colours.

The greatest defect, however, in this part of the atlas is the absence of a few maps illustrating and explaining the development of agriculture in Manitoba, Saskatchewan, and Alberta. The value of the book would have been enhanced by the introduction of some maps similar to those which accompanied Prof. Mavor's report to the Board of Trade on wheat-growing areas in Canada, showing the regions in which the cultivation of wheat is considered possible, the districts in which it is at present grown, the lands which have so far been occupied, &c.

Considerable attention has been paid to meteorology, and some valuable information is given. Besides the isothermal charts, which show temperature reduced to sea-level, and are therefore not particularly illuminating at first sight, in the case of Canada there are several interesting maps showing the number of days during the year in which the temperature is above 32°, 40°, 50°, 60°, and 70° respectively. It is to be hoped that in the course of time it will be possible to verify and extend this information, which is likely to be of great value in Canada, where it is directly connected with important agricultural problems. Unfortunately, we are not told over what period the observations have extended. Space will only permit us to remark that among the remaining maps there are several interesting ones showing the international boundary at various places, and several which show the railways of Canada, completed or projected, along with the sphere of influence of each system. To many of the maps also are appended useful tables of statistics.

That part of the atlas which is occupied by diagrams contains a great deal of valuable information, information of a kind, however, which in the case of a country like Canada begins to be out of date even before the publication of the work in which it is contained. Nevertheless, it suffices to show that within recent years the progress of Canada has been, on the whole, steady and continuous, even although the complete story of its development is not told here. A few examples will illustrate this. The occupied land has increased from 36,000,000 acres (of which 17,000,000 acres were "improved") in 1871 to 63,000,000 acres (of which 30,000,000 acres were "improved") in 1901. The wheat area has been largely extended, though we miss a few diagrams which would have made the extent of this increase visible at a glance.

The exploitation of the mineral wealth of Canada has increased very rapidly within the last twenty years, and is still increasing, notwithstanding the greatly decreased amount of gold which has been produced within the last few years. Regarding the forest products of the country, further information would have been welcome, and the same is true with regard to manufactures. The figures and diagrams which are given under this last head show that the capital invested had increased from 80,000,000 dollars in 1871 to 450,000,000 dollars in 1901, while the number of employees had risen from 180,000 to 313,000 during the same period. (The diagrams, however, do not make it clear how far these figures are comparable.) The chief manufacturing province is Ontario, while Quebec takes second place, and the remaining provinces are of less importance.

The most striking fact brought out by the series of diagrams on the foreign trade of the country is the extent to which the United States is taking the place of Great Britain as the chief importer into Canada. While Canada still sends more of her goods to this country than she does to the States, the latter country supplies her with more than twice the amount that Britain does. The latest figures given are for 1904, but since then the advance of the United States has been continued.

A number of diagrams deal with population in various aspects. One of these shows the distribution of males and females in the different provinces, and incidentally throws light on the conditions of life in different parts of the country. In British Columbia and the Territories, men outnumber women considerably; in Manitoba, Saskatchewan and Alberta to a less extent, and elsewhere only very slightly. The death-rate in all the provinces is less than the average for the British Isles, except in the case of Quebec, where it is higher. In 1891 Quebec was the most illiterate of all the provinces, but the large immigration from the continent of Europe during the following ten years has led to that position being taken by Alberta and Saskatchewan.

There is much in the atlas which it is impossible to touch upon in this review. We can only express our gratification that the Canadian Government has seen its way to publish so important and valuable a work, and hope that the Governments of other countries may follow in its steps.

ANIMAL HISTOLOGY.

A Text-book of the Principles of Animal Histology. By Ulric Dahlgren and Wm. A. Kepner. Pp. xiii+515. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1908.) Price 16*s.* net.

IN many respects Messrs. Dahlgren and Kepner's "Principles of Animal Histology" may be regarded as a decided advance on the current text-book. It is no mere compilation; its method of treatment is novel, the subject-matter embraces a considerable amount of new and original work, and it presents a wider view of histological study than any previous treatise on the subject.

The scheme of the book is the study of structure